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ABSTRACT

Data in this study was gathered to determine which, if either, strategy of teacher education was more effective--conventional teaching methods or modules based on competency based teacher education theory. In addition, the study attempted to determine preservice teacher attitudes toward competency based teacher education (CBTE). The method used involved three groups of preservice teachers (two control and one experimental) a pretest, instructional sequences (with CBTE methods being the independent variable), and a posttest. Analysis of the data indicates that the control group, utilizing conventional teaching strategies, had a significantly higher level of achievement than the experimental group. Additional data from the student opinion survey indicate the following learning activities in the competency based approach were considered beneficial by the participants: seminars, resource people, field experiences, and class tutors. Generally, students found the competency based approach more enjoyable and rewarding, yet more time consuming. In view of the literature, the research, and the trends in education, the competency based approach represents no panacea, but it is a viable alternative for the future. (MB)

Development of a Competency-Based Teacher Education Approach to Individualize Instruction in Human Growth and Learning

By

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If you remember the last time you read "The Hare and the Tortoise," the boasting of the Hare may be easily recalled. "I have never yet been beaten," said he, "when I put forth my full speed. I challenge anyone here to race with me" (5). The Tortoise quietly accepted the challenge. Teacher education has suffered too long from too many "happing" like the Hare and too few "plodding" like the Tortoise. It must be improved when we know better ways to assist pre-professional teachers with developing their awareness of the teaching learning processes; it must be improved when the purposes and content of education itself changes.

The research project reflects the awareness of a trend in teacher education which most institutions preparing teachers are experimenting with. Traditional teacher education programs, according to some critics have not produced effective teachers. Their preparation imposes constants of instruction, assignments, and time requirements; the achievement of the student is the variable. The constant in competency-based instruction is student performance while variability of instruction, assignments, and time is allowed.

The emphasis on federal monies, taxpayer revolts, new technologies, youth rebellions, and drugs have led educators to examine the status of pre-service teacher education. Traditional teacher programs, according to some critics have not produced teachers to work with culturally deprived youth. In other words, we have been judging competence by the number of college courses completed instead of demonstrated performance. The former approach assumes that knowledge of subject matter, teaching methods, and children's learning as measured by course grades correlates with teaching ability (7).

There appears to be general agreement that the competency-based approach to instruction has the following five essential components (2):

1. Teaching competencies to be demonstrated by the pre-professional teacher are stated in behavioral terms and made public in advance;
2. Instruction focuses on the learner;
3. Assessment criteria which include mastery levels are based upon competencies;
4. The rate of progress through the program depends on the learner's demonstrated competency;

5. The approach to instruction is concerned with systematic evaluation and improvement of instruction.

Problem

The study was designed to determine the effectiveness of modules upon the achievement of pre-service teachers. More specifically, it sought to determine the effectiveness of the modules in personalizing and individualizing learning, in providing opportunities for students to choose learning activities, in incorporating field experiences in the learning modules, and in utilizing a variety of media.

The independent variable in the study was the competency-based approach to instruction. The purpose of the study was to determine which, if either, of two teaching strategies was most effective. The null form of the hypothesis generated was: the achievement of university students under conventional and competency-based teaching strategies will not differ from each other.

The study also attempted to determine the opinion of the pre-service teacher toward the competency-based strategy.

The design for the study takes the following form:

GROUP	PRETEST	TREATMENT	POSTTEST
E (experimental)	O_1	X_E	O_2
C (control)	O_1	X_C	O_2

Instructional Modules. The instructional modules developed for this study were arranged units of subject matter consisting of the rationale, behavioral objectives, pre-assessment, learning activities, and post-assessment. Each instructional module was self-paced and sequenced to enable the pre-service teacher to achieve mastery of the concepts. The time for mastery varied with each student. The three instructional modules for this study were: "Classroom Cynamics," "Developmental Aspects of Children and Adolescents," and "Motivation and Learning."

Each of the instructional modules focused on mastery of the skills presented in the unit. Learning was individualized enabling the pre-service teacher to master one conceptual unit before moving to another.

Subjects. The sample for this study were fifty-four pre-service teachers enrolled in three sections of the course, Human Growth and Learning during the Spring Semester, 1975. The subjects included majors representing elementary, secondary, early childhood education, business, and nursing.

The 27 members of experimental group were selected on the basis of their enrollment in "Human Growth and Learning, Competency-Based Approach," Section 1. The entire class was used as the experimental group. The 27 members of the control group were selected from their enrollment in Sections 2 and 3. Since the subjects were already enrolled the investigator did not assign the subjects randomly.

Both the experimental group and the control groups were given a 100-item, multiple choice, pretest at the second class meeting. The control group was selected by assigning numbers to the pretests and then applying the table of random numbers to select 27 members from the original group of 75.

Treatment. The experimental group utilized the three instructional modules instead of regular classroom instruction. Seminars were scheduled throughout the semester for the experimental group. The progress of the experimental group was based on their performance on the three short essay posttests, the case-study, and special projects. The investigator and one research assistant monitored the seminars, student conferences, examinations, and field experiences of the experimental group.

The instructor of the control group utilized a conventional strategy involving a required text as well as additional related reading assignments. Emphasis was placed on subjects completing library and/or field projects, viewing films, participating in class discussions, and taking examination. Class attendance was encouraged.

The investigator and another regular instructor agreed on the objectives for the course and the items for the pretest - posttest. The instrument for the pretest - posttest consisted of 100 multiple-choice items based upon the objectives which provided the criterion for mastery. Previously, the pretest - posttest instrument was tested and revised during the Fall semester.

The posttest was administered to the experimental and control groups as the final examination. Additionally, a questionnaire designed by the investigator to record students' perceptions of the two teaching strategies was administered following the final examination. Student identification was omitted on the forms from both the experimental and the control groups. Data was collected and prepared for computer programming. Important variables were identified.

Statistical Analysis

As stated earlier, the null form of the research hypothesis for the study was: the achievement of pre-service teachers utilizing conventional and competency-based teaching strategies will not differ from each other. An analysis of covarience was calculated.

The findings for the hypothesis are presented in Table 1 and in Table 2.

Table 1. MEANS FOR PRE- AND POST-TEST FOR X_E and X_C

GROUP	N	PRE-TEST MEANS	POST-TEST MEANS ADJUSTED	POST-TEST MEANS NON-ADJUSTED
X_E	24	35.50	57.26	56.75
X_C	26	38.19	71.68	72.15

Table 2.

Summaries of Analysis of Covarience

SOURCE OF VARIANCE	RESIDUALS Df	SS	MS	.05 level F
TREATMENTS	1	.2519	.2519	.1537
WITHIN	47	.7702	.1639	
TOTAL	48	.1022		

The N for the experimental group (X_E) equals 24, the pretest mean for this group was 35.50, and the adjusted posttest mean was 57.26, a difference of 21.76. The N for the control group (X_C) was 26, the pretest mean was 38.19, and the adjusted post-test mean was 71.68, a difference of 33.49. The total degrees of freedom in computing the analysis of covarience for X_E and X_C was 48. The sum of squares within was .7702, the total sum of squares being .1022 and the mean square within being .1639. At .05 level of significance, the F-ratio is .1537 (15.37) indicating the rejection of the null hypothesis. With the one test of analysis of covarience, the investigator tested for mean differences between the two groups while compensating for initial differences between the groups with respect for relevant variables, thereby increasing the precision of the statistical tests. Through analysis of covarience, differences between groups with respect to a criterion variable can be studied although such adjustment procedures on pre-existing groups should not be made without regard to the nature of pre-existing differences between the groups.

From the analyses of covarience the researcher cannot distinguish which of two teaching methods is the better one, only that there is a significant difference between the two methods.

The adjusted posttest means of the experimental group and the control group are, respectively, 57.26 and 71.68. Thus, those students who received instruction which had utilized an approach involving outside reading and discussion, or the more "conventional" approach, were found to have obtained higher scores on the posttest than those students who received instruction which utilized the competency-based approach.

In calculating the T-test for independent samples (See Table 3) the variance for the pretest of X_E was 50.08 with a standard deviation of 7.07, while the variance for the same group on the posttest was 68.71 with a standard deviation of 8.28.

Table 3. T-TEST FOR X_E AND X_C

	PRE-TEST X_E	POST-TEST X_E	PRE-TEST X_C	POST-TEST X_C
$\bar{X}$	35.50	56.75	38.19	72.15
Variance	50.08	68.71	70.00	260.13
S_D	7.07	8.28	8.36	16.12
df	23		25	
correlated T-ratio	8.62		11.64	

The variance on the pretest for X_C was 70.00, with a standard deviation of 8.36. The variance for X_C on the posttest was 260.13 and a standard deviation of 16.12. The correlated T-ratio for the experimental group was 8.62 and 11.64 for the control group.

Although the data indicates statistically significant differences for the control group on achievement, the experimental group using the instructional modules could have been more effective. The posttest for each module was a short essay examination whereas the final criterion was the 100-item multiple choice examination. The control group utilized objective examinations throughout the semester. Therefore, further research is recommended with revisions of the pretest - posttest instrument and the posttests within each instructional module. The Hawthorne effect should also be considered as a variable, Subjects in both the experimental group and the control group were knowledgeable of their participation in the research study during the semester. The time of day the course was scheduled, the GPA of the sample, and teacher effectiveness are other variables which need to be tested.

Further analysis of the data using the analysis of variance revealed a positive attitude toward the competency-based approach to learning. Though fourteen of the questions on the opinion survey were discarded because their F-ratios were below 4.00 (which was necessary for significance at the .05 level), there were five questions remaining on the opinion survey which were significant above the .05 level (See Table 4).

Table 4. ANALYSIS OF VARIANCE BETWEEN EXPERIMENTAL AND CONTROL GROUPS FOR STUDENT QUESTIONNAIRE

	Group				
ITEM #	1 X_E		2 X_C		
	$\bar{X}$	SD	$\bar{X}$	SD	F
1.	1.64	.70	1.62	.86	.01
2.	1.84	.74	1.86	.74	.01
3.	2.36	.56	2.10	.61	2.49
4.	2.04	.84	1.86	.63	.78
5.	1.92	.57	1.93	.88	.00
6.	3.12	.66	2.65	.93	4.29
7.	2.32	1.06	2.41	1.23	.09
8.	2.16	.94	2.48	1.27	1.09
9.	2.56	1.19	2.41	1.29	.18
10.	1.84	.80	1.82	.80	.00
11.	2.88	1.26	2.72	1.19	.22
12.	2.68	1.34	2.75	1.29	.05
13.	1.92	.70	2.34	1.28	2.16
14.	2.56	1.22	3.24	1.15	4.41
15.	2.40	1.11	1.93	.75	3.35
16.	3.80	.57	2.06	1.06	52.48
17.	2.16	1.28	3.03	1.23	6.49
18.	3.08	1.22	3.75	.68	6.54
19.	1.96	.61	2.20	1.31	.74

The F-ratio for item six was 4.29 indicating the experimental treatment strategy was not similar to those in other university courses. Item fourteen has an F-ratio of 4.41 supporting student seminars as a valuable teaching technique. Resource people (item 16) is also significant beyond the .01 level with an F-ratio of 52.48. Field experiences (item 17) and class tutors (item 18) with F-ratios of 6.49 and 6.54, respectively were significant at the .05 level. After completing the first instructional module, students found the remaining units more enjoyable and effective in understanding the concepts of Human Growth and Development.

Conclusions

The competency-based teacher education movement has provided educators the chance to improve pre-service and in-service teacher education. The attempt to specify objectives and individualize instruction may be the answer to the public who want the assurance that the money being spent for education brings about the desired outcomes. It may also be the answer to the cries of students for involvement, participation, and improvement in pre-service teacher education. On the other hand, opponents contend progress on the knowledge and measurement aspects must continue if the competency-based approach to pre-service teacher education survives.

Summary

The research study sought to determine the effectiveness on student achievement of instructional modules for fifty-four pre-service teachers enrolled in three sections of Human Growth and Learning. Analysis of the data indicate the competency-based approach to pre-service teacher education does not make a significant difference in achievement. However, additional data from the student opinion survey indicate the following learning activities in the competency-based approach were beneficial: seminars, resource people, field experiences, and class tutors. Generally, students found the competency-based approach more enjoyable and rewarding, yet more time consuming.

In view of the literature, the research, and the trends in education, the competency-based teacher education approach represents no panacea, but it is a viable alternative for the future. Educators must meet the challenge. We do not need sleepers. We need plodders to bring about improvement in the profession. There's work to be done and plodding wins the race.

The competency-based approach to teacher education raises many important questions. What is an effective teacher? What skills must a pre-service teacher demonstrate and with what kind of children? Hopefully, the answers to these philosophical

questions will provide the link to more humanistic pre-service education.

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